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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
ARNOLD JR, JAMES	
ART UNIT	**PAPER NUMBER**
1764	7

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

mk-7

Office Action Summary	Application No. 09/992,445	Applicant(s) PORTER ET AL.	
	Examiner James Arnold, Jr.	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 November 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-75* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-75* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

Claim 4 is objected to because of the following informalities: It appears that applicant means to "A process according to claim 1" rather than "claim 4". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 11-12, 21-22, 58, 61, and 64 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Vebeliunas (USPN 6,107,533).

The Vebeliunas reference discloses separating said cracked gas stream in a deethanizer zone to produce a C2- stream and a C3+ stream; hydrogenating said C2- stream in a hydrogenation zone to remove a portion of the acetylene to produce a dilute ethylene stream; separating said C3+ stream in a depropanizer zone to produce a C3- stream and a C4+ stream; and reacting a C3- stream in a MAPD reactor zone to convert a portion of methylacetylene and propadiene to propylene and propane to produce a dilute propylene stream. See Column 2, lines 20-67 and Column 3, lines 1-35. The reference discloses a process further comprising separating a C4+ stream in a debutanizer zone to produce a C4 stream and a C5+ stream. See Column 2, lines 35-40. The reference

discloses compressing a C2- stream in a compression zone to form a pressurized C2- stream. Column 6, lines 49-65. The reference discloses hydrogenating a portion of the acetylene in the cracked gas stream in hydrogenation zone to produce a reduced acetylene cracked gas stream and separating said reduced acetylene cracked gas stream in a deethanizer zone to produce said dilute ethylene stream and a C3+ stream. See Column 3, lines 64-68 and Column 4, lines 1-2 and lines 42-56.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3-6, 13-16, and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533) in view of Rao (WO 01/64340 A1).

The Rao reference discloses the formation of olefin derivatives from recovered olefins including ethylene and propylene. See Page 14, line 29. These derivatives

include ethylbenzene, cumene, acrylic acid, and propylene oxide. See Page 15, lines 20-27.

The Rao reference does not disclose a dilute ethylene and propylene derivative unit.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Vebeliunas to include the olefin derivates of Rao and the olefin derivative units because both references disclose processes of producing olefins and an olefin derivative unit is the means through which an olefin derivative is produced.

Claims 7,17, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533) in view of Owen et al. (USPN 6,258,989).

The Owen reference discloses a process comprising treating said C5+ stream in a hydrotreating zone to produce a C5 diolefins stream, a BTX stream, and a DCPD stream. See Column 13, lines 30-36.

The reference does not disclose a process comprising treating said C5+ stream in a hydrotreating zone to produce a fuel oil stream.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Vebeliunas to utilize a process comprising treating said C5+ stream in a hydrotreating zone to produce a C5 diolefins stream, a BTX stream, and a DCPD stream and furthermore produce a fuel oil stream because both references disclose the upgrading of hydrocarbons and because fuel oil is a product of hydrotreating.

Claims 8-10, 18-20, and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533).

The Vebeliunas reference discloses steam cracking for gas streams with diverse constituents. See Column 1, lines 18-25. The reference discloses quenching, compressing, and deacidifying cracked gas streams. See Column 1, lines 59-67 and Column 6, lines 49-65. The reference discloses a process wherein the hydrocarbon feed is selected from the group consisting of ethane, propane, butanes, pentanes, naphtha, and mixtures thereof. See Column 1, lines 59-67 and Column 6, lines 49-55.

The reference does not disclose a process wherein the raw cracked gas stream comprises hydrogen, methane, C2 hydrocarbons, C3 hydrocarbons and heavier constituents. The reference does not disclose removing a portion of the hydrogen sulfide to form a wet cracked gas stream and drying said wet cracked gas stream in a drying zone to form a cracked gas stream. The reference does not disclose a process wherein the hydrocarbon feed consists essentially of C5 hydrocarbons.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein the raw cracked gas stream comprises hydrogen, methane, C2 hydrocarbons, C3 hydrocarbons and heavier constituents because the reference discloses steam cracking for gas streams with diverse constituents. It would have been obvious to one having ordinary skill in the art at the time the invention was made to remove a portion of the hydrogen sulfide to form a wet cracked gas stream and drying said wet cracked gas stream in a drying zone to form a cracked gas stream because this places the cracked gas stream in condition to be used for the production of an olefin stream. It would have been obvious to one having ordinary skill in the art at the time the

invention was made to utilize a process wherein the hydrocarbon feed consists essentially of C5 hydrocarbons because the reference discloses steam cracking for gas streams with diverse constituents.

Claims 31-32 and 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533).

The Vebeliunas reference discloses steam cracking for gas streams with diverse constituents. See Column 1, lines 18-25. The reference discloses quenching, compressing, and deacidifying cracked gas streams. See Column 1, lines 59-67 and Column 6, lines 49-65. The reference discloses a process wherein the hydrocarbon feed is selected from the group consisting of ethane, propane, butanes, pentanes, naphtha, and mixtures thereof. See Column 1, lines 59-67 and Column 6, lines 49-55. The Vebeliunas reference discloses separating said cracked gas stream in a deethanizer zone to produce a C2- stream and a C3+ stream. See Column 2, lines 20-67 and Column 3, lines 1-35. The reference discloses hydrogenating said pressurized C2- stream in a hydrogenation zone to remove a portion of the acetylene to produce a dilute ethylene stream. See Column 2, lines 20-67 and Column 3, lines 1-35. The reference discloses separating said C3+ stream in a depropanizer zone to produce a C3- stream and a C4+ stream. See Column 2, lines 20-67 and Column 3, lines 1-35. The reference discloses reacting a C3- stream in a MAPD reactor zone to convert a portion of methylacetylene and propadiene to propylene and propane to produce a dilute propylene stream. See Column 2, lines 20-67 and Column 3, lines 1-35. The reference discloses a process further comprising separating a C4+ stream in a debutanizer zone to produce a C4 stream and a C5+ stream. See Column 2, lines 35-40. The reference discloses a process wherein the hydrocarbon feed is

selected from the group consisting of ethane, propane, butanes, pentanes, naphtha, and mixtures thereof. See Column 1, lines 59-67 and Column 6, lines 49-55.

The reference does not disclose a process wherein the raw cracked gas stream comprises hydrogen, methane, C2 hydrocarbons, C3 hydrocarbons and heavier constituents. The reference does not disclose removing a portion of the hydrogen sulfide to form a wet cracked gas stream and drying said wet cracked gas stream in a drying zone to form a cracked gas stream. The reference does not disclose a process wherein the hydrocarbon feed consists essentially of C5 hydrocarbons. The reference does not disclose compressing said C2- stream in a second compression zone to form a pressurized C2- stream.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein the raw cracked gas stream comprises hydrogen, methane, C2 hydrocarbons, C3 hydrocarbons and heavier constituents because the reference discloses steam cracking for gas streams with diverse constituents. It would have been obvious to one having ordinary skill in the art at the time the invention was made to remove a portion of the hydrogen sulfide to form a wet cracked gas stream and drying said wet cracked gas stream in a drying zone to form a cracked gas stream because this places the cracked gas stream in condition to be used for the production of an olefin stream. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein the hydrocarbon feed consists essentially of C5 hydrocarbons because the reference discloses steam cracking for gas streams with diverse constituents. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein said C2- stream is

compressed in a second compression zone to form a pressurized C2- stream because the reference discloses the use of a compressor.

Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533) in view of Owen et al. (USPN 6,258,989).

The Owen reference discloses a process comprising treating said C5+ stream in a hydrotreating zone to produce a C5 diolefins stream, a BTX stream, and a DCPD stream. See Column 13, lines 30-36.

The reference does not disclose a process comprising treating said C5+ stream in a hydrotreating zone to produce a fuel oil stream.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Vebeliunas to utilize a process comprising treating said C5+ stream in a hydrotreating zone to produce a C5 diolefins stream, a BTX stream, and a DCPD stream and furthermore produce a fuel oil stream because both references disclose the upgrading of hydrocarbons and because fuel oil is a product of hydrotreating.

Claims 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533) in view of Rao (WO 01/64340 A1).

The Rao reference discloses the formation of olefin derivatives from recovered olefins including ethylene and propylene. See Page 14, line 29. These derivatives include ethylbenzene, cumene, acrylic acid, and propylene oxide. See Page 15, lines 20-27.

The Rao reference does not disclose a dilute ethylene and propylene derivative unit.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Vebeliunas to include the olefin derivates of Rao and the olefin derivative units because both references disclose processes of producing olefins and an olefin derivative unit is the means through which an olefin derivative is produced.

Claims 40-41 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533).

The Vebeliunas reference discloses steam cracking for gas streams with diverse constituents. See Column 1, lines 18-25. The reference discloses quenching, compressing, and deacidifying cracked gas streams. See Column 1, lines 59-67 and Column 6, lines 49-65. The reference discloses a process wherein the hydrocarbon feed is selected from the group consisting of ethane, propane, butanes, pentanes, naphtha, and mixtures thereof. See Column 1, lines 59-67 and Column 6, lines 49-55. The Vebeliunas reference discloses separating said cracked gas stream in a deethanizer zone to produce a C2- stream and a C3+ stream. See Column 2, lines 20-67 and Column 3, lines 1-35. The reference discloses hydrogenating said pressurized C2- stream in a hydrogenation zone to remove a portion of the acetylene to produce a dilute ethylene stream. See Column 2, lines 20-67 and Column 3, lines 1-35. The reference discloses separating said C3+ stream in a depropanizer zone to produce a C3- stream and a C4+ stream. See Column 2, lines 20-67 and Column 3, lines 1-35. The reference discloses reacting a C3- stream in a MAPD reactor zone to convert a portion of methylacetylene and propadiene to propylene and propane to produce a dilute propylene stream. See Column 2, lines 20-67 and Column 3, lines 1-35. The reference discloses a process further comprising separating a

C4+ stream in a debutanizer zone to produce a C4 stream and a C5+ stream. See Column 2, lines 35-40. The reference discloses a process wherein the hydrocarbon feed is selected from the group consisting of ethane, propane, butanes, pentanes, naphtha, and mixtures thereof. See Column 1, lines 59-67 and Column 6, lines 49-55.

The reference does not disclose a process wherein the raw cracked gas stream comprises hydrogen, methane, C2 hydrocarbons, C3 hydrocarbons and heavier constituents. The reference does not disclose removing a portion of the hydrogen sulfide to form a wet cracked gas stream and drying said wet cracked gas stream in a drying zone to form a cracked gas stream. The reference does not disclose a process wherein the hydrocarbon feed consists essentially of C5 hydrocarbons.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein the raw cracked gas stream comprises hydrogen, methane, C2 hydrocarbons, C3 hydrocarbons and heavier constituents because the reference discloses steam cracking for gas streams with diverse constituents. It would have been obvious to one having ordinary skill in the art at the time the invention was made to remove a portion of the hydrogen sulfide to form a wet cracked gas stream and drying said wet cracked gas stream in a drying zone to form a cracked gas stream because this places the cracked gas stream in condition to be used for the production of an olefin stream. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein the hydrocarbon feed consists essentially of C5 hydrocarbons because the reference discloses steam cracking for gas streams with diverse constituents.

Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533) in view of Owen et al. (USPN 6,258,989).

The Owen reference discloses a process comprising treating said C5+ stream in a hydrotreating zone to produce a C5 diolefins stream, a BTX stream, and a DCPD stream. See Column 13, lines 30-36.

The reference does not disclose a process comprising treating said C5+ stream in a hydrotreating zone to produce a fuel oil stream.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Vebeliunas to utilize a process comprising treating said C5+ stream in a hydrotreating zone to produce a C5 diolefins stream, a BTX stream, and a DCPD stream and furthermore produce a fuel oil stream because both references disclose the upgrading of hydrocarbons and because fuel oil is a product of hydrotreating.

Claims 43-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533) in view of Rao (WO 01/64340 A1).

The Rao reference discloses the formation of olefin derivatives from recovered olefins including ethylene and propylene. See Page 14, line 29. These derivatives include ethylbenzene, cumene, acrylic acid, and propylene oxide. See Page 15, lines 20-27.

The Rao reference does not disclose a dilute ethylene and propylene derivative unit.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Vebeliunas to include the olefin derivates of

Rao and the olefin derivative units because both references disclose processes of producing olefins and an olefin derivative unit is the means through which an olefin derivative is produced.

Claims 49-50 and 56-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533).

The Vebeliunas reference discloses steam cracking for gas streams with diverse constituents. See Column 1, lines 18-25. The reference discloses quenching, compressing, and deacidifying cracked gas streams. See Column 1, lines 59-67 and Column 6, lines 49-65. The reference discloses hydrogenating a portion of the acetylene in said cracked gas stream in a hydrogenation zone to produce a reduced acetylene cracked gas stream and separating said reduced acetylene cracked gas stream in a deethanizer zone to produce said dilute ethylene stream and a C3+ stream. See Column 2, lines 20-67 and Column 3, lines 1-35. The reference discloses separating said C3+ stream in a depropanizer zone to produce a C3- stream and a C4+ stream; and reacting a C3- stream in a MAPD reactor zone to convert a portion of methylacetylene and propadiene to propylene and propane to produce a dilute propylene stream. See Column 2, lines 20-67 and Column 3, lines 1-35. The reference discloses a process further comprising separating a C4+ stream in a debutanizer zone to produce a C4 stream and a C5+ stream. See Column 2, lines 35-40. The reference discloses a process wherein the hydrocarbon feed is selected from the group consisting of ethane, propane, butanes, pentanes, naphtha, and mixtures thereof. See Column 1, lines 59-67 and Column 6, lines 49-55.

The reference does not disclose a process wherein the raw cracked gas stream comprises hydrogen, methane, C2 hydrocarbons, C3 hydrocarbons and heavier constituents. The reference does not disclose removing a portion of the hydrogen sulfide to form a wet cracked gas stream and drying said wet cracked gas stream in a drying zone to form a cracked gas stream. The reference does not disclose a process wherein the hydrocarbon feed consists essentially of C5 hydrocarbons.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein the raw cracked gas stream comprises hydrogen, methane, C2 hydrocarbons, C3 hydrocarbons and heavier constituents because the reference discloses steam cracking for gas streams with diverse constituents. It would have been obvious to one having ordinary skill in the art at the time the invention was made to remove a portion of the hydrogen sulfide to form a wet cracked gas stream and drying said wet cracked gas stream in a drying zone to form a cracked gas stream because this places the cracked gas stream in condition to be used for the production of an olefin stream. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein the hydrocarbon feed consists essentially of C5 hydrocarbons because the reference discloses steam cracking for gas streams with diverse constituents.

Claims 51-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533) in view of Rao (WO 01/64340 A1).

The Rao reference discloses the formation of olefin derivatives from recovered olefins including ethylene and propylene. See Page 14, line 29. These derivatives

include ethylbenzene, cumene, acrylic acid, and propylene oxide. See Page 15, lines 20-27.

The Rao reference does not disclose a dilute ethylene and propylene derivative unit.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Vebeliunas to include the olefin derivates of Rao and the olefin derivative units because both references disclose processes of producing olefins and an olefin derivative unit is the means through which an olefin derivative is produced.

Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533) in view of Owen et al. (USPN 6,258,989).

The Owen reference discloses a process comprising treating said C5+ stream in a hydrotreating zone to produce a C5 diolefins stream, a BTX stream, and a DCPD stream. See Column 13, lines 30-36.

The reference does not disclose a process comprising treating said C5+ stream in a hydrotreating zone to produce a fuel oil stream.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Vebeliunas to utilize a process comprising treating said C5+ stream in a hydrotreating zone to produce a C5 diolefins stream, a BTX stream, and a DCPD stream and furthermore produce a fuel oil stream because both references disclose the upgrading of hydrocarbons and because fuel oil is a product of hydrotreating.

Claims 59-60, 62-63, 65-66, 68-69, 71-72, and 74-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533) in view of Rao (WO 01/64340 A1).

The Rao reference discloses the formation of olefin derivatives from recovered olefins including ethylene and propylene. See Page 14, line 29. These derivatives include ethylbenzene, cumene, acrylic acid, and propylene oxide. See Page 15, lines 20-27.

The Rao reference does not disclose a dilute ethylene and propylene derivative unit.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Vebeliunas to include the olefin derivates of Rao and the olefin derivative units because both references disclose processes of producing olefins and an olefin derivative unit is the means through which an olefin derivative is produced.

Claim 67 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533).

The Vebeliunas reference discloses steam cracking for gas streams with diverse constituents. See Column 1, lines 18-25. The reference discloses quenching, compressing, and deacidifying cracked gas streams. See Column 1, lines 59-67 and Column 6, lines 49-65. The reference discloses a process wherein the hydrocarbon feed is selected from the group consisting of ethane, propane, butanes, pentanes, naphtha, and mixtures thereof. See Column 1, lines 59-67 and Column 6, lines 49-55. The reference discloses separating said cracked gas stream in a deethanizer zone to produce a C2-

stream and a C3+ stream; compressing said C2- stream in a second compression zone to form a pressurized C2- stream; and hydrogenating said pressurized C2- stream in a hydrogenation zone to remove a portion of the acetylene to produce said dilute ethylene stream; and routing said C3+ stream to storage or other process unit. See Column 2, lines 20-67; Column 3, lines 1-35; Column 3, lines 64-68; and Column 4, lines 1-2 and lines 42-56. .

The reference does not disclose a process wherein the raw cracked gas stream comprises hydrogen, methane, C2 hydrocarbons, C3 hydrocarbons and heavier constituents. The reference does not disclose removing a portion of the hydrogen sulfide to form a wet cracked gas stream and drying said wet cracked gas stream in a drying zone to form a cracked gas stream.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein the raw cracked gas stream comprises hydrogen, methane, C2 hydrocarbons, C3 hydrocarbons and heavier constituents because the reference discloses steam cracking for gas streams with diverse constituents. It would have been obvious to one having ordinary skill in the art at the time the invention was made to remove a portion of the hydrogen sulfide to form a wet cracked gas stream and drying said wet cracked gas stream in a drying zone to form a cracked gas stream because this places the cracked gas stream in condition to be used for the production of an olefin stream.

Claims 70 and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vebeliunas et al. (USPN 6,107,533).

The Vebeliunas reference discloses steam cracking for gas streams with diverse constituents. See Column 1, lines 18-25. The reference discloses quenching, compressing, and deacidifying cracked gas streams. See Column 1, lines 59-67 and Column 6, lines 49-65. The reference discloses a process wherein the hydrocarbon feed is selected from the group consisting of ethane, propane, butanes, pentanes, naphtha, and mixtures thereof. See Column 1, lines 59-67 and Column 6, lines 49-55. The reference discloses separating said cracked gas stream in a deethanizer zone to produce a C2- stream and a C3+ stream; and hydrogenating said pressurized C2- stream in a hydrogenation zone to remove a portion of the acetylene to produce said dilute ethylene stream; and routing said C3+ stream to storage or other process unit. See Column 2, lines 20-67; Column 3, lines 1-35; Column 3, lines 64-68; and Column 4, lines 1-2 and lines 42-56. .

The reference does not disclose a process wherein the raw cracked gas stream comprises hydrogen, methane, C2 hydrocarbons, C3 hydrocarbons and heavier constituents. The reference does not disclose removing a portion of the hydrogen sulfide to form a wet cracked gas stream and drying said wet cracked gas stream in a drying zone to form a cracked gas stream.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein the raw cracked gas stream comprises hydrogen, methane, C2 hydrocarbons, C3 hydrocarbons and heavier constituents because the reference discloses steam cracking for gas streams with diverse constituents. It would have been obvious to one having ordinary skill in the art at the time the invention was made to remove a portion of the hydrogen sulfide to form a wet cracked gas stream and

drying said wet cracked gas stream in a drying zone to form a cracked gas stream because this places the cracked gas stream in condition to be used for the production of an olefin stream.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Flick et al. USPN 5,866,734); Bradow et al. (USPN 6,210,561 B1); Voight et al. (USPN 6,486,369) ; Busson et al. (USPN 6,333,443) ; Bradow et al. (USPN 6,190,533) ; Haehn (USPN 4,701,190) ; Lam et al. (USPN 5,220,097) ; Juguin et al. (USPN 5,138,113). These references disclose olefin production processes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Arnold, Jr. whose telephone number is 703-305-5308. The examiner can normally be reached on Monday-Thursday 8:30 AM-6:00 PM; Fridays from 8;30 AM-5:00 PM with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.

Walter D. Griffin
Primary Examiner

ja
May 5, 2003